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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/462,506	05/03/2000	IAN CHRISTISON SAYERS	P64393US0	5168

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EXAMINER	
PADGETT, MARIANNE L	
ART UNIT	**PAPER NUMBER**
1762	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/462,506	Applicant(s) Sayers
	Examiner M.L. Padgett	Group Art Unit 1762

—Th MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 1-25.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-25 is/are pending in the application.

Of the above claim(s) 1-11 + 22-25 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 12-21 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Stat ment(s), PTO-1449, Paper No(s). 6

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Draftsperson's Pat nt Drawing Review, PTO-948

☐ Int rview Summary, PTO-413

☐ Notice of Informal Pat nt Application, PTO-152

☐ Other _____

Office Action Summary

Lack of Unity/Election

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in response to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-11 and 24-25, drawn to a fabric.

Group II, claim(s) 12-21, drawn to a method.

Group III, claim(s) 22-23, drawn to an apparatus.

2. The special technical feature of group I is the fabric subjected to a plasma treatment, as recited in claim 1. The forgoing special technical feature is shown in the prior art of 5344462 and 5041304. Therefore, there is no contribution made over the prior art. Hence there is no unity of invention and lack of unity is held by the Examiner.

3. During a telephone conversation with Michael Cornelison on 1/4/02 a provisional election was made with traverse to prosecute the invention of group II, claims 12-21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-11 and 22-25 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. Claims 12-21 are objected to or rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 is vague and indefinite as the scope of "improved" is relative or unclear. Improved as compared to what, or to produce what results, etc....?

In claims 16, 17 and 18, it is uncertain as presently phased if the plasma necessarily contains the specific chemicals, because all these claims depend from 15, where there are 3 alternatives listed, but these subsequent claims do not require choice of any particular one of the alternative generic choices. Therefore as written, any silane or siloxane will literally read on claim 18, but it is doubtful that this was applicants' intent.

In claim 17, "siloxane" is objected to as lacking a correct article for showing antecedent basis.

In claim 21, does applicant actually mean that the plasma is diluted? Helium is a well-known plasma gas. Hence may form plasma all by itself, so how does it dilute the plasma? Diluting chemicals of claim 20 would make more scientific sense.

Claim 18 is further rejected as confusing, since tetrachloroethylene contains no fluorine, hence contradicting of the generic group, as it is NOT a flurocarbon.

In claim 12, due to the excessively alternative phrasing and lack of punctuation, it is uncertain if the claims require one to be treating substrates made of fabric or if one can treat the fibers before it is made into cloth. Also, in line 3 "fibres" is objected to for using the French language spelling, instead of American English.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 12, 15, (16-17) and 18-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kusano et al.

In Kusano et al, see the abstract; fig 1; col. 2, lines 22-43; col. 3, line 12-col. 4, line 22; col. 5, lines 5-20 and 53-col. 6, line 12-col. 40, for plasma treatment of nylon or non-woven fabrics, with an atmospheric pressure plasma that contains perfluorocarbons or halogenated (fluorinated) hydrocarbons, such as CF_4, perflourocyclopentane (i.e. C=5), fluoroethylene, etc., noting that the class of hydrocarbons is inclusive of halogenated hydrocarbons. Kusano et al's fluorinated compounds are used in a mixture (i.e. diluted therewith) with an inert gas, such as He, when forming the plasma.

Note that claims 16-17 are only included because they do not actually require use of the silane or siloxane, hence the choice of using the fluorocarbon alternative will still read on these claims, until the language therein positively claims the probably intended limitation.

8. Claims 12-14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Paskalov et al ('462).

In Paskalov et al ('462), see the abstract; col. 1, lines 5-13 and 59-col. 2, line 32; plus example 1-2 and 5-7, for treating of fabrics made of natural or synthetic fibers (wool, cotton, flax, etc.), with Plasmas from inorganic gases, inclusive of O_2 and air. This treatment results in increase receptivity of dyestuffs, increased capillary absorption and decreased wetting angle, which is effectively within the scope of what claim 13 requires.

9. Claims 12-14 and 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Paskalov et al ('576).

Paskalov et al ('576) contains the teaching of (462), plus a second plasma treatment that polymerizes the hydrocarbon CH_4, for adherent deposition of a coating. See the abstract; col. 2, line 55-col . 3, line 35; col. 4; and claims.

10. Claims12-15, (16-17) and 18-19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Reiner et al.

Claims 17 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiner et al.

Reiner et al teach a 2 step plasma procedure for treating fabrics made up of fibers, using a first plasma that may be O_2, N_2, H_2, He, etc., which activates the surfaces for subsequent treatment. The second plasma uses organic compounds, such as hydrocarbon (saturated or unsaturated), fluorocarbons or siloxanes, specifically mentioning perfluorinated alkenes like CF_4or C_2F_6, which plasma polymerize for adherent coating. While Reiner et al's organic compounds are preferably gas at room temperature; they may also be liquids that may be entrained in an inorganic gas for introduction into the plasma. See the abstract; col.1, line 15-28; col. 2, line 1-col. 3, line 60; and col. 4, lines 38-50.

Reiner et al not specifically teach $Si(OCH_3)_4$ (i.e. TMOS), or halogenated hydrocarbons or use of He as a diluent when using the latter. However, TMOS is the simplest member of the generic class siloxanes, and is homologous with hexamethtyl disiloxane taught in Reiner et al, hence it would have been obvious to one of ordinary skill in the art to use TMOS as an alternative to the specifically exemplified siloxane, because it is analogous thereto, such that it would have been expected to provide equivalent results.

Similarly, halogenated a fluorinated hydrocarbon are a subsets of both hydrocarbons and fluorocarbons, both of which are taught by Reiner et al, hence it would have been obvious to one of ordinary skill that partially fluorinated, as well as fully fluorinated hydrocarbons would have functional equivalent in the process, hence have been equivalently useful. Any of such compounds which are liquid at room temperature would have been expected to be mixed with a carrier gas, such as an inorganic as taught on col. 2, lines 40-45, particularly inert gases like He, because Reiner et al teach such a procedure, and inert gas will not interfere with the polymerization process.

11. Claims 12-15, (16,17) and 18 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Milding et al (Moelnlycke).

In Milding et al, see the abstract; page 5 for types of fibers that make up the material; pg. 7 for choosing from O_2, NH_4, CF_4, Ar, He,... and organic unsaturated gases for the gas(es) in the plasma. Enduses on p. ll include industrial and household, medical and sanitary products, etc., that maybe paper or filter related.

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Milding et al.

While Milding et al do not explicitly teach hydrocarbons, one of ordinary skill in the art would interpreted "organic unsaturated gases" to be inclusive or suggestive thereof, hence it would have been obvious to use classes of gases suggested by the disclosure, but not specifically named, because they would have been expected to be effective.

13. Claims 12-14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Komatsu et al.

Komatsu et al teach plasma-treating fabric with oxidizing gases, such as oxygen, mixed with N_2, air, Ar or He. The fabric is made of polyolefin non-woven fibers, and maybe used for purposes, such as filters, packaging or sanitary napkins. See the abstract; col. 1, lines 5-27, and 44-68; and col. 3, lines 6-24 and 53-59.

14. Claims12-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jeffery et al.

The EPO publication to Jeffery et al teaches plasma-treating materials that may be organic and in the form of fibers or woven fabrics or membranes, that may be used as filters, etc. The plasma is made with compounds that supply hydroxyl groups, such as water or ethylene glycol or monhydric alcohols of 1-4 C, etc., thus rendering the surface hydrophilic, i.e. increases its wettability. See the abstract; pg. 2, lines 1-9, 27-40 and 48-50; examples 2 and 5; and claims 1, 4-6+.

15. The EP references to Truckenmueller et al and Oehr et al were used against the claims in the PCT case, but are in Germany hence can not be read by this examiner.

Johnson et al and Fagerholm et al cited by applicant are directed to paper making felt or fabric, which is of interest to the intended use of products of the claimed process. Note that presently, the intended use adds no necessary limitations to the procedures claimed.

16. Claims 12-13 and 15-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hiratsu.

The Japanese abstract to Hirotsu teaches plasma treating paper or (non)woven fabric with a gaseous silicon compound that might be a siloxane or tetramethylsilane.

17. Claims 12- 13, 15-17 and 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Normura.

In Normura, see abstract; col. 4, lines 34-55 and 68-col. 5, lines 5+; col. 6, lines 26-45; Example 2 and claims 31-39.

18. Claims 12-13, 15-16 and 18-19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yamamoto et al ('079).

In Yamamoto et al, see the abstract; col. 2, lines 12-40+; col. 3, lines 15-29 (textile) and 61-68+ (plasma); col. 4, lines 19-43 (plasma polymerization gases including tetramethylsilane, tetrafluoromethane, perfluoropropane, saturated or unsaturated hydrocarbons, etc...,as well as other fluorocarbons and siloxane compounds).

19. Any inquiry concerning this communication should be directed to M L. Padgett at telephone number 703-308-2336 on M-F from about 8 am - 4:30 pm, and FAX# (703) 305-5408 (official); 872-9311 (after final); & 305-6078 (unofficial).

Examiner Padgett/ng

April 18, 2002 April 22, 2002

MARIANNE PADGETT
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GROUP 1100